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UNITED STATES PATENT AND TRADEMARK OFFICE

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09/544,167	04/06/2000	Hiroyuki Urushiya	35.G2566	9371

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

       1.☒ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____ .

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5)☐ Notice of Informal Patent Application (PTO-152)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6)☐ Other: .

DETAILED ACTION

Specification

1.	The specification is objected to as failing to provide proper antecedent basis for

the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction

of the following is required: "Recording" medium as recited in claim 26. The examiner

suggests that the word "recording" be changed to the word "storage."

Claim Rejections - 35 USC § 103

2.	The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.	Claims 1-5, 11-14, and 20-23 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Watanabe et al (US Patent No: 6002433) in view of Fossum et al (US

Patent No: 6611288).

4.	Regarding claim 1, Watanabe et al discloses an image pickup device that

includes a defective pixel detecting circuit with means for extracting (operating circuit;

column 3 line 13) a pixel signal of a defective pixel. These defective pixels are included

in the possible defective pixels extracted by Watanabe et al's device. The image pickup

device includes a CCD that is well known to include a plurality of pixels (Watanabe et al

figure 1, item 2; column 3, lines 13-18). Therefore Watanabe et al's invention clearly

comprises an image processing apparatus comprising: extraction means for extracting a

pixel signal of a defective pixel included in image pickup means having a plurality of

pixels and determining a defective pixel. Watanabe et al do not disclose a block-forming means for forming positional information of a plurality of the defective pixels determined by the extraction means into a block only a means for storing individually each defective pixel's positional information (address). Fossum et al disclose a means for investigating and correcting dead pixels wherein the positional information of the dead pixels are formed into areas (blocks) using control unit 200 and stored in register 300 (Fossum et al figures 2 and 3; column 1, lines 63+; column 2, lines 63-65; column 6 lines 37-41). Therefore Fossum et al's device comprises a block-forming means for forming positional information of a plurality of defective pixels. Because the defective pixels are stored as blocks, the amount of memory required to be dedicated to defective pixel correction is decreased. This translates to lower manufacturing costs (Fossum et al column 1, lines 33-36 and 57-62). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Watanabe et al using the disclosure of Fossum et al in order to arrive at the applicant's invention as claimed in claim 1 since doing so would enable the device to utilize less memory and hence reduce manufacturing costs.

5.   Regarding claim 2, see the examiner's comments on claim 1 above and note that in the combination of Watanabe et al and Fossum et al as applied to claim 1, since pixels may be coded in blocks, then register 300 which is a dead pixel register, comprises a storage means that is used for storing the positional information of the defective pixels in units of blocks (Fossum et al figure 3; column 2, lines 63-65; column 3, lines 1-23).

6.   Regarding claim 3, see the examiner's comments on claim 1 above and note that

in the combination of Watanabe et al and Fossum et al as applied to claim 1, the

block-forming means forms the positional information of the plurality of defective pixels

of the image pickup means into the block by coding the positional information of the

defective pixels (Fossum et al column 3, lines 2-23).

7.   Regarding claim 4, see the examiner's comments on claim 1 above and note that

in the combination of Watanabe et al and Fossum et al as applied to claim 1, the

block-forming means forms the positional information of the plurality of defective pixels

of the image pickup means into the block by using run-length coding since each of the

pixel areas or blocks can be identified using a single indicia in the form of (R, C, T)

where T can be a three bit code that indicates the area size (length). See Fossum et al

column 3, lines 12-23.

8.   Regarding claim 5, see the examiner's comments on claim 1 above and note that

since the pixels will be corrected and their positional information is stored in the block

then it is obvious that the block comprises positional information of pixels in the image

pick-up device and that these pixels are required for the correction of the defective

pixels because the positional information of the defective pixels are required for their

own correction.

9.   Regarding claim 11, the examiner's comments on claim 1 above are hereby

applied.

10.   Regarding claim 12, see the examiner's comments on claim 11 above and note

that the examiner's comments on claim 3 above are also applied.

11.   Regarding claim 13, see the examiner's comments on claim 11 above and note

that the examiner's comments on claim 4 above are also applied.

12.   Regarding claim 14, see the examiner's comments on claim 11 above and note

that the examiner's comments on claim 5 above are also applied.

13.   Regarding claim 20, see the examiner's comments on claim 1 above and note

that in the combination of Watanabe et al and Fossum et al a storage medium is

obviously present in order to store the program to be implemented in figure 1 of Fossum

et al. Therefore this storage medium would be used to meet the limitations of claim 20.

14.   Regarding claim 21, see the examiner's comments on claim 20 above and note

that the examiner's comments on claim 3 above are also applied.

15.   Regarding claim 22, see the examiner's comments on claim 20 above and note

that the examiner's comments on claim 4 above are also applied.

16.   Regarding claim 23, see the examiner's comments on claim 20 above and note

that the examiner's comments on claim 5 above are also applied.

17.   Claims 6, 15, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable

over the combination of Watanabe et al and Fossum et al as applied to claims 2, 11,

and 20 above respectively, and further in view of Chien et al (US Patent No: 5621467).

18.   Regarding claim 6, the combination of Watanabe et al and Fossum et al as

applied to claim 2 above discloses all the limitations except wherein the image

processing apparatus further comprises correction means for correcting the defective

pixel signals in units of blocks included in the image-pickup means by using the

positional information of the defective pixel signals stored in the storage means, and a

means for individual pixel correction (Fossum et al column 3, lines 66+; column 4, lines 1-2). Chien et al disclose a concealment method for video signal processors and teach that it is well known to perform interpolation to generate a block of pixel values to replace a lost or damaged block of pixel, in other words, a block of defective pixel (column 1, lines 23-27). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the above combination as applied to claim 2 using the teachings of Chien et al in order to allow the correction of defective pixels in units of blocks by the correction means disclosed in the above combination, since it is well known in the art to do so, and processing is faster when replacing blocks of defective pixels as compared to replacing defective pixels individually.

19.   Regarding claim 15, see the examiner's comments on claim 11 above and note that the examiner's comments on claim 6 are hereby applied.

20.   Regarding claim 24, see the examiner's comments on claim 20 above and note that the examiner's comments on claim 6 are hereby applied.

21.   Claims 7-10, 16-19, and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al in view of Chien et al.

22.   Regarding claim 7, Fossum et al discloses a means for defective (dead) pixel detection and correction in an image-sensing device, and a means for individual pixel correction (Fossum et al column 3, lines 66+; column 4, lines 1-2). Register 300 (Fossum et al figure 3; column 2, lines 63-65) is a dead pixel register and a storage means for storing the positional information of the defective pixels in units of blocks

since the defective pixels may be coded in blocks. The image-sensing device in Fossum
et al has an implied plurality of pixels because Fossum et al's device identifies a dead
pixel area as a group of pixels that includes pixels that are in some way defective
(Fossum et al column 1, lines 65+). Fossum et al do not disclose a correction means
for correcting defective pixel signals of the defective pixels in the image pickup means in
units of blocks by using the positional information of the defective pixels stored in the
storage means. Chien et al disclose a concealment method for video signal processors
and teach that it is well known to perform interpolation to generate a block of pixels
values to replace a lost or damaged block of pixel, in other words, a block of defective
pixel (column 1, lines 23-27). Therefore it would have been obvious to one of ordinary
skill in the art at the time the invention was made to modify the device of Fossum et al
using the teachings of Chien et al in order to allow the correction of defective pixels in
units of blocks by the correction means disclosed in Fossum et al, since it is well known
in the art to do so, and processing is faster when replacing blocks of defective pixels as
compared to replacing defective pixels individually.

23.   Regarding claim 8, see examiner's comments on claim 7 above and note that in
the combination of Fossum et al and Chien et al as applied to claim 7, the block-forming
means forms the positional information of the plurality of defective pixels of the image
pickup means into the block by coding the positional information of the defective pixels
(Fossum et al column 3, lines 2-23).

24.   Regarding claim 9, see examiner's comments on claim 7 above and note that in
the combination of Fossum et al and Chien et al as applied to claim 7, the block-forming

means forms the positional information of the plurality of defective pixels of the image

pickup means into the block by using run-length coding since each of the pixel areas or

blocks can be identified using a single indicia in the form of (R, C, T) where T can be a

three bit code that indicates the area size (See Fossum et al column 3, lines 12-23).

25.   Regarding claim 10, see examiner's comments on claim 7 above and note that

since the pixels will be corrected and their positional information is stored in the block,

then it is obvious that the block comprises positional information of pixels in the image

pick-up device and that these pixels are required for the correction of the defective

pixels because the positional information of the defective pixels are required for their

own correction.

26.   Regarding claim 16, the examiner's comments on claim 7 are hereby applied and

note that because the positional information of the defective pixels are coded in blocks it

is obvious that they would be read in blocks during the coding and correction process.

27.   Regarding claim 17, see the examiner's comments on claim 16 above note that

examiner's comments on claim 8 are hereby applied.

28.   Regarding claim 18, see the examiner's comments on claim 16 above note that

examiner's comments on claim 9 are hereby applied.

29.   Regarding claim 19, see the examiner's comments on claim 16 above note that

examiner's comments on claim 10 are hereby applied.

30.   Regarding claim 25, the examiner's comments on claim 16 are hereby applied

and note that in the combination of Fossum et al and Chien et al a storage medium is

obviously present in order to store the program to be implemented in figure 1 of Fossum et al. Therefore this storage medium would be used to meet the limitations of claim 25.

31.   Regarding claim 26, see the examiner's comments on claim 25 above note that examiner's comments on claim 8 are hereby applied.

32.   Regarding claim 27, see the examiner's comments on claim 25 above note that examiner's comments on claim 9 are hereby applied.

33.   Regarding claim 28, see the examiner's comments on claim 25 above note that examiner's comments on claim 10 are hereby applied.

34.   Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al in view of Chien et al and further in view of Acharya (US Patent No: 6301392).

35.   Regarding claim 29, Fossum et al discloses an image processing apparatus that includes means for defective (dead) pixel detection and correction in an image-sensing device, and means for individual pixel correction (Fossum et al column 3, lines 66+; column 4, lines 1-2). Register 300 (Fossum et al figure 3; column 2, lines 63-65) is a dead pixel register and a storage means for storing the positional information of the defective pixels in units of blocks since the defective pixels may be coded in blocks. The image-sensing device in Fossum et al has an implied plurality of pixels because Fossum et al's device identifies a dead pixel area as a group of pixels that includes pixels that are in some way defective (Fossum et al column 1 lines 65+). Fossum et al do not disclose a correction means for correcting defective pixel signals of the defective pixels in the image pickup means in units of blocks by using the positional information of the defective pixels stored in the storage means neither do Fossum et al disclose a

monitor for monitoring the image signal processed by the image processing apparatus

nor a network for transmitting the image signal processed by the image processing

apparatus or an image database, connected to the network, for storing the image signal.

Chien et al disclose a concealment method for video signal processors and teach that it

is well known to perform interpolation to generate a block of pixel values to replace a

lost or damaged block of pixel, in other words, a block of defective pixel (column 1, lines

23-27). Chien et al do not disclose the rest of the limitations of claim 29, however it is

well known in the art to include a monitor in an image processing apparatus in order to

see the images that are being processed, a database for storing the images, and a

network connected to the database over which to transmit the images. Acharya

discloses an image processing apparatus comprising a monitor, a database (computer)

for storing the images and a network connected to the database over which to transmit

the images (Acharya figure 7, items 720, and 710). Note that both the interface between

the camera and the computer and the interface between the computer and the monitor

are considered to be networks. Therefore it would have been obvious to one of ordinary

skill in the art at the time the invention was made to modify the device of Fossum et al

using the teachings of Chien et al in order to allow the correction of defective pixels in

units of blocks by the correction means disclosed in Fossum et al, since it is well known

in the art to do so, and processing is faster when replacing blocks of defective pixels as

compared to replacing defective pixels individually. Also it would be still further obvious

to one of ordinary skill in the art at the time the invention was made to modify the above

modification using Acharya in order to provide a monitor for monitoring the image signal

processed by the image processing apparatus, a network for transmitting the image

signal processed by the image processing apparatus, and an image database

connected to the network for storing the image signal, since it is well known in the art to

do so

Conclusion

36.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Hawthorne et al US Patent No: 5917935

Iwamura US Patent No: 5400076

Younse et al US Patent No: 4805023

Levine US Patent No: 4703442

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Hedley Linton whose telephone number is (703) 305-

4693. The examiner can normally be reached on 9am-6:30pm, Mon-Thu; 9am-5:30pm

every other Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone

number for the organization where this application or proceeding is assigned is (703)

872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (305) 305-

4700.

Hedley Linton
Examiner
Art Unit 2615
September 24, 2003

ANDREW CHRISTENSEN
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